U. S. FOREST SERVICE

RESEARCH NOTE LS-63

LAKE STATES FOREST EXPERIMENT STATION • U. S. DEPARTMENT OF AGRICULTURE

Botanical and Commercial Range of Eastern White Pine in the Lake States

Accurate maps showing the distribution of important tree species are valuable to foresters, botanists, wildlife specialists, land managers, and others. Although the general natural ranges for our principal tree species have been well known for some time, new information continues to develop. Commercial ranges, however, have not previously been mapped precisely, and artificial extensions of ranges generally have not been mapped at all. For these reasons, range maps of the principal forest tree species have been prepared[1] for the Lake States (Michigan, Minnesota, and Wisconsin), and that for eastern white pine (*Pinus strobus* L.) is presented here (fig. 1).

Accuracy depends in part on the scale of the map being used. On this map, it is not practical to separate out isolated stands except when they are some distance from the main range. Accordingly, the main range boundary as drawn may include several outliers near the edge of the principal distribution.

In the silvical characteristics reports for Lake States tree species,[2] commercial ranges were mapped, but they were based on the following broad definition: "Commercial range is defined as the distribution of the species as a major or important component in the type, now or in the past, regardless of whether it is now being utilized." In this Note, commercial ranges are defined on a wood volume basis and are indicated for each county that presently has at least 1,000 cords of eastern white pine (fig. 1). Counties with 10,000 to 99,000 cords and those with at least 100,000 cords of white pine are specially designated. The commercial range is based primarily on published reports of the Forest Survey, supplemented for completeness by unpublished data from the same source.

The natural range is based on published reports[3] as modified by the observations of qualified foresters and botanists.[4] A supplemental map (fig. 2) shows the plots used in making the distribution map. These plots were derived from actual herbarium specimens or from other reliable sources.

Within its natural range in the Lake States, eastern white pine grows most commonly on level to gently rolling, well-drained to excessively well-drained sandy soils, although it also occurs on heavier soils and less frequently on rocky areas or swamps. In the Driftless Area of southwestern Wisconsin and adjacent States, the outliers usually are found on steep, rocky slopes on acidic soils (commonly sandstone, and sometimes quartzite). It grows both in pure stands and in mixture with a large number of tree species, the most common of which in approximate order of frequency are the aspens (quaking and bigtooth), red maple, paper birch, balsam fir, white spruce, northern white-cedar, red pine, black spruce, sugar maple, and red oaks (mainly northern red, but also some black oak). Associates vary geographically and according to site conditions. For example, in Michigan, yellow birch and eastern hemlock are common associates in addition to the other species listed.

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[1] *Other published reports in this series are for jack pine (U.S. Forest Serv. Res. Note LS-15, 1963) and red pine (U.S. Forest Serv. Res. Note LS-62, 1965).*

[2] *See Lake States Forest Experiment Station, Station Paper 67, which includes a list of silvical reports.*

[3] *Fassett, Norman C. Preliminary reports on the flora of Wisconsin V. Coniferales, Wis. Acad. Sci., Arts and Letters Trans. 25: 177-182, illus., 1930. Also, Wilson, Robert W., Jr., and William E. McQuilkin. Silvical characteristics of eastern white pine. U.S. Forest Serv. Res. Paper NE-13, 28 pp., illus. 1963.*

[4] *Information in this note has been reviewed by Arthur W. Bloomer, Michigan Department of Agriculture; Drs. Edward Flaccus and Paul Monson, University of Minnesota, Duluth; Jacob Licke, Walker, Minn.; Dr. E. L. Little, Jr., U.S. Forest Serv., Washington, D. C.; Dr. Thomas Morley, University of Minnesota, Minneapolis; Lawrence Ritter, St. Paul, Minn.; Kenneth Robert, Wisconsin Department of Agriculture; Dr. E. P. Van Arsdel, Lake States Forest Experiment Station, and staff members at all field units of the Station; Dr. Edward Voss, University of Michigan; and staff members of all National Forests and Conservation Departments in Michigan, Minnesota, and Wisconsin.*

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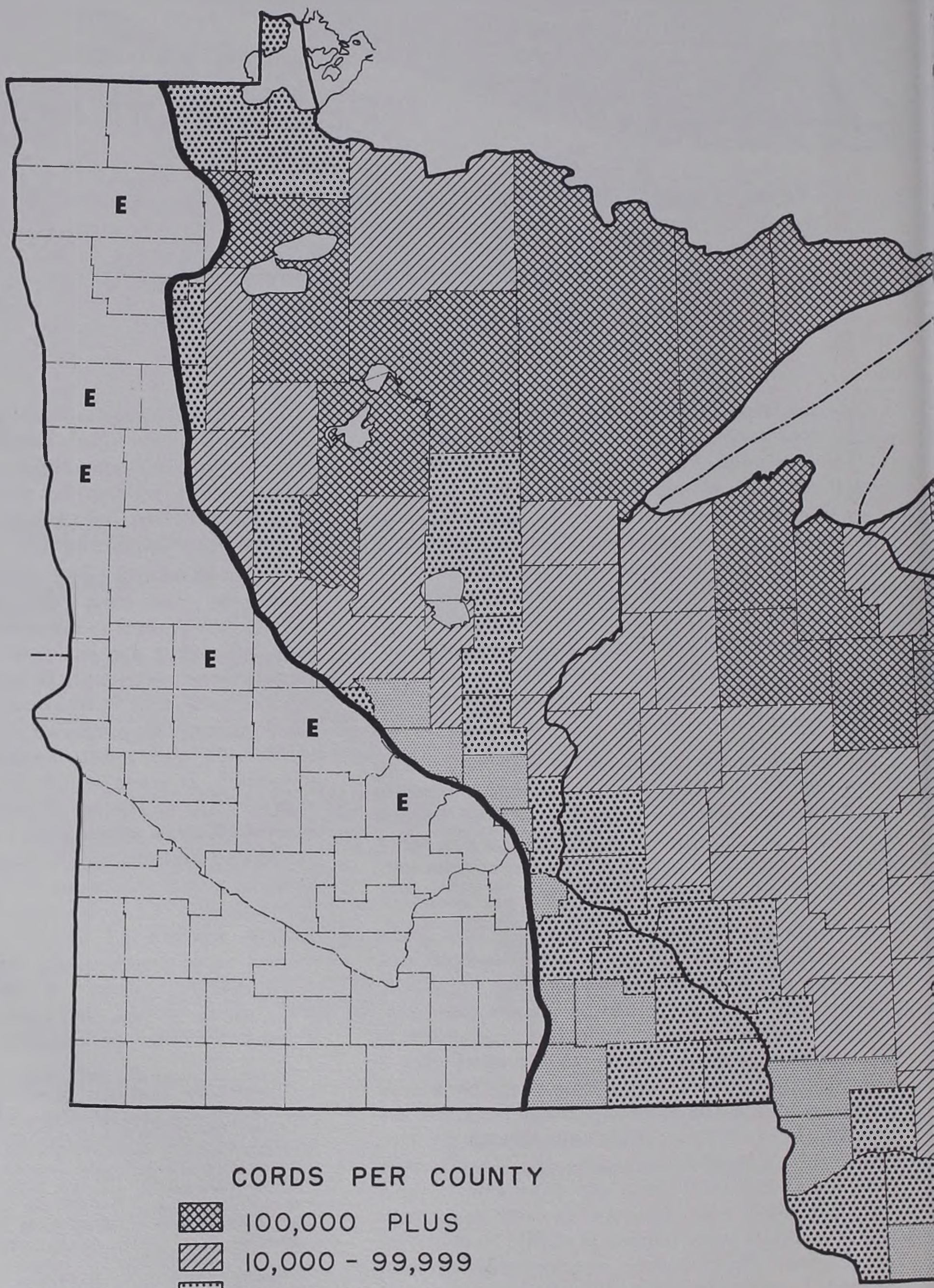

CORDS PER COUNTY

- 100,000 PLUS
- 10,000 - 99,999
- 1,000 - 9,999
- NONCOMMERCIAL
- E 100 ACRES OR MORE PLANTED

FIGURE 1. — Botanical and commercial range of eastern white pine in the Lake States. The botanical range includes the areas within the heavy line. The commercial range includes all counties within the botanical range that have at least 1,000 cords of white pine.

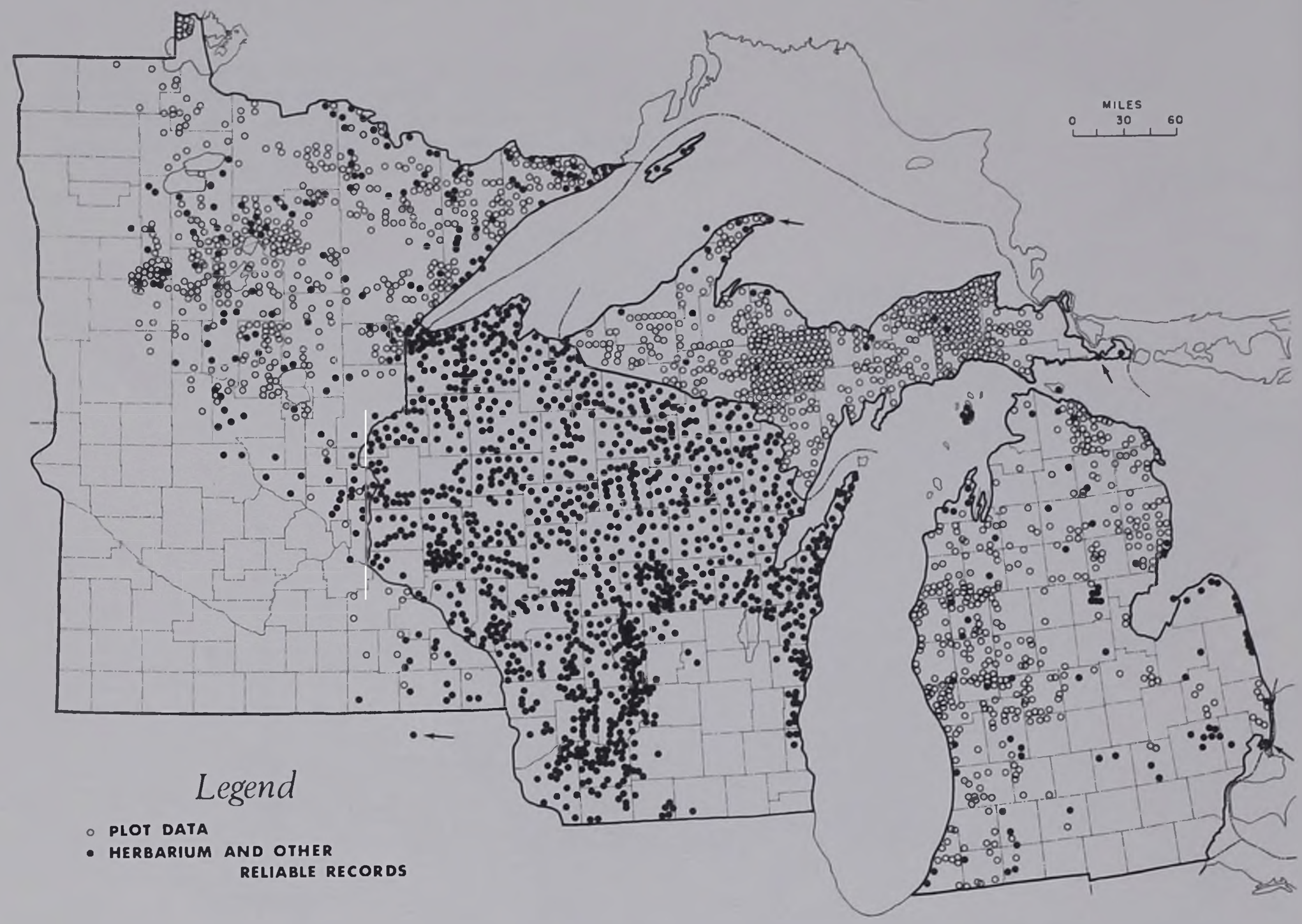

FIGURE 2. — Locations in which native *Pinus strobus* is known to occur, according to herbarium and other reliable records based on identifiable plant material* or plot data. The latter were obtained from the Forest Survey, National Forest Timber Survey, State inventory plots, and cutting records.

*Includes material from (1) the following herbaria: Cranbrook Institute of Science, Michigan State University, Milwaukee Public Museum, University of Michigan, University of Minnesota (Duluth), University of Minnesota (Minneapolis), University of Wisconsin (Madison), and University of Wisconsin (Milwaukee); (2) seed collection records of the Lake States Forest Experiment Station and Michigan State University; (3) superior tree records of the Lake States Forest Experiment Station; (4) seed production areas on record at the Lake States Forest Experiment Station; (5) a vegetational survey made by Dr. Egolfs Bakuzis, of the University of Minnesota; and (6) Fassett 1930 (see footnote 3) for most of the Wisconsin locations.

The natural distribution of eastern white pine is outlined on the map. Planting, however, is beginning to extend the range and eventually may blur the outlines of the natural range. Where planting has been extensive enough to develop at least 100 acres per county of established stand, it has appeared in Forest Survey statistics. Data have also been obtained from nursery distribution records and other State forestry sources. Stands of this extent beyond the known botanical range are shown by an "E" in the counties involved. Planting within the botanical distribution may increase the commercial range.

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[5] *While this paper was being prepared, the junior author was Associate Professor at Michigan State University.*